13 August 2021

To: Water Pollution Control Permittees

From: Aimee Keys, Chief
Bureau of Mining Regulation and Reclamation

Re: Modification to Profile I-R Parameter list

The Bureau of Mining Regulation and Regulation (BMRR) has modified the Profile I-R parameter list. The modification is based on the review of data from various projects and the potential to impact groundwater and surface water quality as well as cross-over with the Nevada Department of Health and Human Services - Radiation Control Program. This modification supersedes the 20 March 2018 memo.

If the ore, waste rock, or process fluid is known or likely to contain elevated concentrations of radionuclides, a Profile I-R analysis will be required for some or all monitoring points, as applicable.

The Profile I-R consists of the following parameters:

As dissolved metals, i.e. filtered at 0.45um, preserved, digested, and analyzed

Alkalinity (as $CaCO_3$)	Cadmium	Magnesium	Silver
Bicarbonate	Calcium	Manganese	Sodium
Total	Chloride	Mercury	Sulfate
Aluminum	Chromium	Nitrate + Nitrite (as N)	Thallium
Antimony	Copper	Nitrogen, Total (as N)	Total Dissolved Solids
Arsenic	Fluoride	pH (± 0.1 SU)	WAD Cyanide
Barium	Iron	Potassium	Zinc
Beryllium	Lead	Selenium	

As total recoverable content, unfiltered, preserved as required per method specifics:

Uranium	Radium 226 + Radium 228
Gross Alpha	Radium 226
Adjusted Gross Alpha *	Radium 228

*Adjusted gross alpha is gross alpha minus the uranium activity in pCi/L. Uranium activity is calculated by multiplying the concentration in mg/L by a conversion factor of 0.67 pCi/mg.

Additional radiological analysis may be required if the following conditions are met:

1. Electrical conductivity value ≥ 1,000 uS/cm; and,
2. If the standard deviation (SD) of the gross alpha analysis ≥ 15 pCi/L; or,
3. If the SD of Rd 226+228 is ≥ 5 pCi/L;

then, the sample shall also be analyzed for Th230 (using the Eichrome method ACW10-11).

Gross alpha shall be reported as 'adjusted'. If the SD of the gross alpha analysis is ≥ 15 pCi/L, e.g. 10 ± 75 pCi/L, re-analysis for gross alpha using the co-precipitation method, EPA 00-02, may be required. Please contact the Division for further guidance.

In addition, if uranium is ≥0.03 mg/L in solution or is known or suspected to be ≥ 0.05% (500 mg/kg) in the ore, BMRR recommends that the Permittee contact the Nevada Department of Health and Human Services - Radiation Control Program to further discuss characterization and associated potential Permitting or licensing/license requirements.

The complete Profile I-R parameter list including reference values can be found on the Division website at:

https://ndep.nv.gov/land/mining/regulation/guidance-policies-references-and-requirements

If you have any questions regarding his notification, please contact Karl McCrea, (775) 687-9407, kmccrea@ndep.nv.gov.